

FM SUBCARRIER DISCRIMINATOR

...with TAPE SPEED COMPENSATION



Model FDS34
\$395!

CHARACTERISTICS

- ★ SOLID STATE PULSE AVERAGING DESIGN AT LOW COST!
- ★ A MINIMUM IMPROVEMENT OF 20DB FOR WOW AND FLUTTER TAPE SPEED VARIATIONS AS GREAT AS $\pm 3\%$!
- ★ MODULAR PACKAGING—14 DISCRIMINATORS AND POWER SUPPLY FIT IN $3\frac{1}{2}$ "x19" WIDE RACK ADAPTER!
- ★ EACH FDS34 DISCRIMINATOR CONTAINS INTEGRAL BANDPASS FILTER DELAY COMPENSATING NETWORK!
- ★ PLUG-IN CONSTANT AMPLITUDE OR LINEAR PHASE LOWPASS FILTER!
- ★ ALL IRIG & CONSTANT BANDWIDTH CHANNELS! ★ OPERATION FROM 120VRMS $\pm 10\%$, 47-440 CPS!
- ★ 0.1% LINEARITY! ★ OUTPUT ± 1 TO ± 10 VOLTS, ZERO TO ± 10 MA!

Low cost, high performance and compact size are combined in the Airpax FDS34 Subcarrier Discriminator. Advanced circuit design employed for tape speed error compensation yields concurrent superior dynamic response and low harmonic distortion. All conventional channels are accommodated. Low-pass filter characteristics can be easily changed via a plug-in module.



The HWS33

**HWS33
RACK ADAPTER
\$300!**

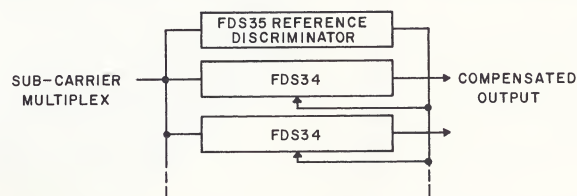
3 15/32" h — 19" w — 17 3/4" d

The HWS33 Rack Adapter mounts 14 discriminator modules and the PAS55 Power Supply. Input and output connections are provided on the rear cover. Power supply and compensation signal wiring are supplied internally in the HWS33 Rack Adapter. AC

power is applied to barrier terminals at the back of the HWS33 Rack Adapter. When tape speed error compensation is not required, 14 data discriminators and power supply are accommodated by the HWS33 rack adapter.

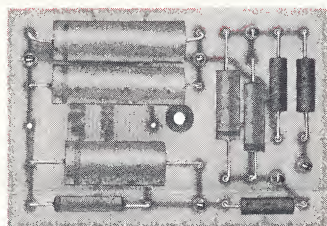
The tape speed error compensation system has been designed for utmost simplicity. The block diagram shows that with the conventional 100KC reference channel, no external signal delay is necessary for precise error compensation. This was accomplished by designing all data channel bandpass filters for compensating time delay. The difference in time delay between the reference and data channels is corrected by a small internal delay compensation network in each data discriminator. For other reference frequencies a signal delay unit is used to delay the multiplex supplied to the data discriminators.

This merely compensates for the difference in delay between the 100KC reference channel and the reference being used. No adjustments are necessary to obtain optimum tape speed compensation!



TAPE SPEED ERROR COMPENSATION BLOCK DIAGRAM

**LOWPASS
FILTER
P N LPS22
\$45!**



The lowpass filter in the FDS34 discriminator is replaceable. Lowpass filters are available for all standard IRIG channels allowing the substitution of constant amplitude and linear phase configurations and to alter the lowpass cutoff frequencies. Non-standard cutoff frequencies are also available.

**FDS35
REFERENCE
DISCRIMINATOR
\$450!**

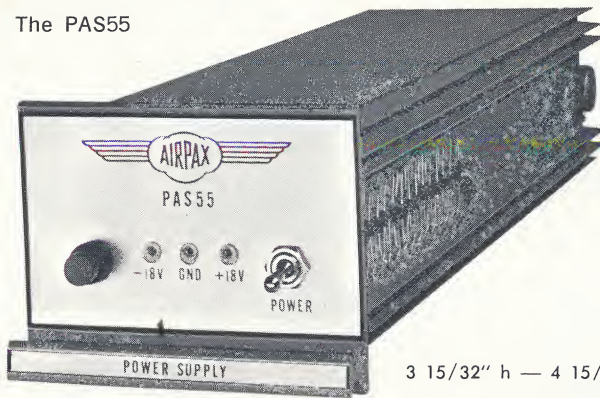


The FDS35

3 15/32" h — 15 1/6" w
17 1/2" d

The FDS35 Reference Discriminator is similar to the FDS34 except for bandpass and low-pass filters and increased output current capacity. The FDS35 can supply compensation to as many as 18 FDS34's simultaneously without interaction. The FDS35 is supplied with filters for operation on any one of the standard 100KC, 50KC, or 25KC channels. Use of 50KC or 25KC reference channels requires the addition of a signal delay unit, P/N SDS2, to the system.

The PAS55



**PAS55
POWER SUPPLY
\$350!**

**SDS2
SIGNAL DELAY
UNIT
\$300!**

3 15/32" h — 4 15/32" w — 16 1/4" d

(Not illustrated)

The PAS55 Power Supply is capable of supplying as many as 18 discriminators (including a reference discriminator) simultaneously. Regulation of all voltages is provided so that removal or addition of discriminators from the system will not affect performance. The PAS55 is equipped with a front panel pilot lamp and Airpax electromagnetic circuit protector for control and indication of power.

Signal Delay Unit, SDS2, is used only when the reference frequency is other than 100KC. Standard delays are available for 50KC and 25KC references. Other frequencies can be accommodated. The SDS2 can be furnished in plug-in form identical to the FDS34 discriminator and rack wiring supplied accordingly. If preferred, the SDS2 can be supplied in a flat package for mounting at the rear of the HWS33 Rack Adapter.

SPECIFICATION — FDS34

Subcarrier Frequencies: Available in all IRIG Channels 1 through 21 and A through H. Also Constant Bandwidth Channels. Specials to order.

Frequency Deviations: Standard IRIG deviations plus specials $\pm 5\%$ to $\pm 40\%$.

Data Frequency Responses: Low pass cutoff frequencies, 6 CPS to 20 KC. Rolloff asymptotic to 18db/octave with either Constant Amplitude or Linear Phase characteristics.

Input Dynamic Range: 10 millivolts to 10 Volts RMS.

Amplitude Modulation Rejection: With a modulation index of 5, a 20db step in amplitude of the input anywhere within the 60db dynamic range will result in a peak output transient of less than 1% of bandwidth.

Adjacent Channel Rejection: Full scale modulation on the nearest adjacent $\pm 7.5\%$ IRIG Channel will produce crosstalk of no greater amplitude than 60db down from full bandwidth where the interfering signal is 16db greater than the desired signal at the discriminator input.

Linearity: $\pm 0.1\%$ of bandwidth.

Output Ripple and Noise: Less than 0.1% of bandwidth with a modulation index of 5 or greater.

Zero Stability: Within 0.5% of bandwidth over a 24 hour period after 20 minute warmup.

Output Voltage: Adjustable ± 1 volt to ± 10 volts peak, single ended referred to ground.

Output Current: ± 2 ma at 10 volts to ± 10 ma up to 2 volts.

Output Impedance: 1 ohm nominal, 5 ohms max.

Output Load Capacity: Capacitive loading of any amount will not cause oscillation. Parallel RC load impedance must not exceed rated load for linear operation. Short circuit will not cause damage.

Output Voltage Limit: Less than 150% of maximum output voltage.

Harmonic Distortion: Less than 0.5% of bandwidth for modulation index of 5 or more for any modulating frequency up to cutoff frequency of the channel.

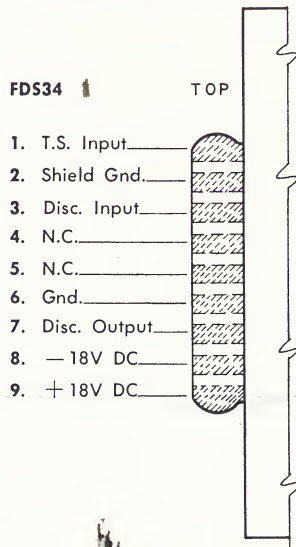
Power Requirements: Operates from PAS55 Power Supply Module which requires 120 volts $\pm 10\%$, 47 to 440 cps; 3.5 watts per channel maximum.

Temperature Range: Operating, $+10^{\circ}\text{C}$ to $+50^{\circ}\text{C}$ circulating air. Non-operating -55°C to $+80^{\circ}\text{C}$.

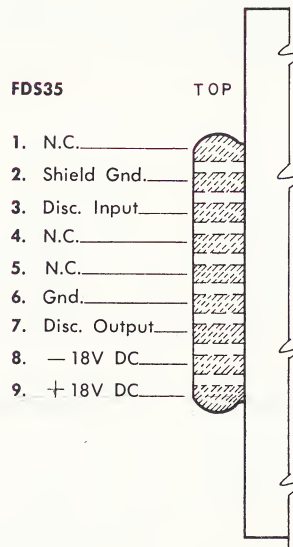
Tape Speed Compensation: A minimum improvement of 20db for wow and flutter tape speed variations as great as $\pm 3\%$ up to the cutoff frequency of the channel for all standard subcarriers. Each FDS34 contains the necessary delay network to compensate for the delay of its bandpass filter.

REAR TERMINAL STRIP CONNECTIONS

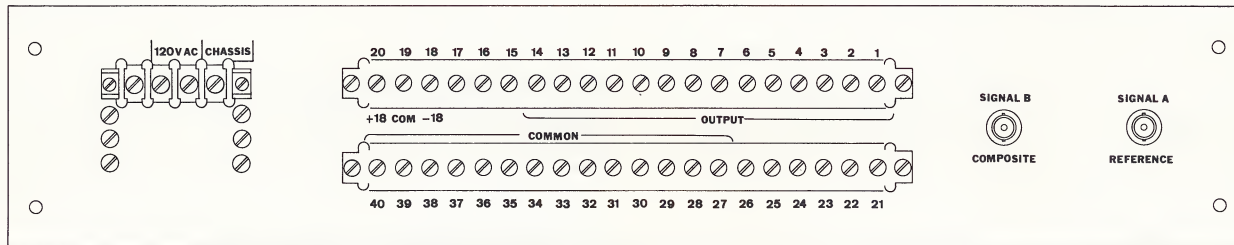
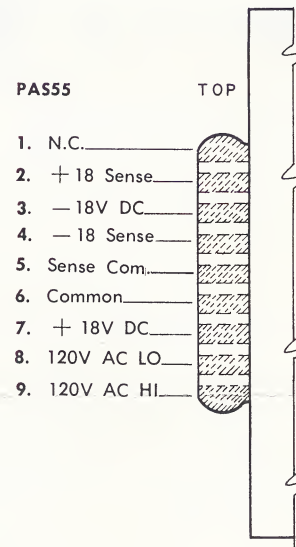
FDS34



FDS35



PAS55



HWS 33 REAR PANEL CONNECTIONS



SEMINOLE DIVISION, FORT LAUDERDALE, FLORIDA 33310

PHONE 305 587-1100

TWX 510 - 955-9866